;login:

The USENIX Association Newsletter

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The closing date for submissions for the next issue of *;login:* is January 5, 1987

USENIX THE PROFESSIONAL AND TECHNICAL UNIX® ASSOCIATION

NOTICE

;login: is the official newsletter of the USENIX Association, and is sent free of charge to all members of the Association.

The USENIX Association is an organization of AT&T licensees, sub-licensees, and other persons formed for the purpose of exchanging information and ideas about UNIX[†] and similar operating systems and the C programming language. It is a non-profit corporation incorporated under the laws of the State of Delaware. The officers of the Association are:

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Contributions Solicited

Members of the UNIX community are heartily encouraged to contribute articles and suggestions for *;login:*. Your contributions may be sent to the editors electronically at the addresses above or through the U.S. mail to the Association office. The USENIX Association reserves the right to edit submitted material.

;login: is produced on UNIX systems using *troff* and a variation of the –me macros. We appreciate receiving your contributions in *n/troff* input format, using any macro package. If you contribute hardcopy articles please leave left and right margins of 1″ and a top margin of 1½″ and a bottom margin of 1¼″. Hardcopy output from a line printer or most dot-matrix printers is not reproducible.

Acknowledgments

The Association uses a VAX[‡] 11/730 donated by the Digital Equipment Corporation for support of office and membership functions, preparation of *;login:*, and other association activities. It runs 4.3BSD, which was contributed, installed, and is maintained by mt Xinu. The VAX uses a sixteen line VMZ-32 terminal multiplexor donated by Able Computer of Irvine, California.

Connected to the VAX is a QMS Lasergrafix[*] 800 Printer System donated by Quality Micro Systems of Mobile, Alabama. It is used for general printing and draft production of *;login:* with *ditroff* software provided by mt Xinu.

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The Future of ;login:

In both the July/August and the September/October issues of *;login:*, I ran short notes soliciting articles, notes, letters, and comments for inclusion in the Association's bimonthly. While there were some responses, we really need more good articles.

As those of you who follow the Association's affairs know, there is a good deal of interest in the possibility of the USENIX Association publishing a genuine technical journal. Such a publication would be juried (that is, the contributions would be reviewed by an external panel) and would appear quarterly.

For the USENIX Association to embark upon such an endeavor it must receive encouragement from its membership in the form of submissions. I would like to see a major increase in technical material published in *;login:* in 1987, articles, notes, reviews, and letters, leading up to a first issue of the journal in March 1988.

Were that to happen, *;login:* would revert to being a bimonthly newsletter of about 16 pages.

The September/October issue of *;login:* saw the publication of a first book review and the first "Ten Years Ago..." Several more book reviews will appear in the January/February issue, but we still need good technical articles and notes.

UNIX NEWS and the first year of *;login:* carried bug fixes, among other things. Perhaps some of you might be interested in continuing that practice.

Many of you will have seen the description of the Technical Editor position on the net. By the time you read this, Rob Kolstad and I will most likely have brought our search to a conclusion, and the pelt of the new Technical Editor will be adorning the Association's hardware.

Please consider the notion that only through the quality of the submissions can *;login:* grow and flourish. I hope to find my files clogged with brilliant articles.

– PHS

Membership renewal invoices will be mailed soon.

Please pay promptly.

Take advantage of the current tax law,

renew your membership for two or three years!

Software Distribution Tape 86.2

Contrary to a previous announcement, there will be a second 1986 distribution tape. While the contents are not yet finalized, the tape will include **drawit** – An Interactive Drawing Board Package by David H. Williams and Inaam Bakir of The University of Texas at El Paso. **drawit** is a menu-driven graphics editor featuring facilities to edit and store created images. Generic objects are supported, such as boxes, lines, circles, etc. along with methods for joining, overlapping and clipping. There is a thorough document describing all of the features and usage of all the commands. Also included is a demonstration package.

Another program on the tape will be the **Ease** software by James S. Schoner, described in the January/February 1986 *;login:*. **Ease** is a high-level specification format for **sendmail**'s configuration file.

Peter Honeyman's **pathalias** and the UUCP Project's **SMAIL** will also be on the tape.

This tape, which contains only unlicensed material, will be distributed around the end of this year to all 1986 Institutional and Supporting members; it will be available to Individual Members for $100, prepaid.

– PHS

DUE TO PROBLEMS IN OBTAINING

SUFFICIENT PAPER STOCK,

IT NOW APPEARS THAT THE 4.3BSD

MANUALS WILL NOT BE READY

FOR SHIPMENT BEFORE

JANUARY 1.

Personalizing the Impersonal

and Other Tales of Communication in the Computer Age

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Introduction

One of the greatest drawbacks of computer-based communication is the lack of presence of the medium. When we talk to someone in person, we can see them, receiving cues from their clothing, posture, facial expressions, and their very physical presence. On the telephone we also receive considerably more information that just the words, including volume, pitch and intonation.

On computers, however, there is nothing but the words themselves. This leads to a surprising number of problems in communicating, mostly due to our language having evolved to be spoken, rather than written.

To combat this, a number of interesting techniques are becoming commonplace, most of which are attempts to personalize the medium. Herein we'll present a brief overview of the most common attempts, including overt hostility, flaming, and various stylistic topics, and discuss motivational factors.

Simulating Visual Cues

When talking to someone in person, one of the most useful sources of information is body language. Many books have been written on interpretation of visual cues. Such cues are not available with computer-based communications, however, and a number of alternative ways of simulating them have arisen. Perhaps the most noticeable is the ubiquitous smiley-face "`:-)`" which, when viewed by tilting your head to the left, actually looks like a face. This is used to represent a specific cue, as are a number of variations.

`:-)` This is used at the end of a passage of text to indicate that the previous was either sarcastic or should be taken as a joke. For example, it's common to have phrases like "If this was a QUALITY system... `:-)`" where the understood meaning is that the phrase is said in jest, not seriously.

`;-)` (A "winking" smile) This is similar in meaning to the previous, but is used as a stronger expression of levity. It's also quite commonly used to indicate lewd, but lighthearted, comments. For example, "So, want to sleep at my place when you're in town? `;-)`" Again, the understood meaning is that it's all in fun.

`:-(` (Unhappy face) This symbol represents unhappiness, and usually is used to emphasize a bad event occurring, as in: "and our SYSOP told me we don't DO backups anymore!! Two months worth of work LOST! `:-(`"

That these symbols have "evolved" purely because of the need to transmit such cues is an interesting example of the communicative value of non-verbal aspects of language.

Simulating Verbal Cues

Some members of the electronic community feel that the caricatures are "juvenile," however, and they add cues in a manner more akin to a playwright (the previous can be typified as a cartoonist approach). Their communications are punctuated by phrases expressing the appropriate verbal and visual cues:

```
"Trust me.  This'll work!  *evil laugh*"
```

Obviously, this approach tends to convey more information than the icons, with the penalty of increased verbosity.

The stressing of individual words or phrases (verbal cues) also shows the varied approaches taken; by far the most common cue being all uppercase letters. There are a large number of different techniques currently being used:

```
"...and then SUE walked in to the room.  I just *couldn't* believe it.
Of all the people to show up, >Sue< was the last one I was expecting!
It was \fIreally\fP mind-boggling!"
```

The last example, the word being surrounded by "\fI" and "\fP" is worth special note – it is the sequence in a popular text formatting system by which one generates italics. It's as if the author assumes that the reader can emulate the formatting system. (Another example of this is more common – underlined phrases are delimited by leading and trailing underscores, as in _this phrase_. A different text formatting system uses this notation to delimit a passage to be underlined. As with the other form, it's assumed that the person can interpret the text accordingly).

Presentation Styles

As anyone who took a high school typing class will know, oftentimes the form is as important as the content of a message. Computer-based communications systems are no different and a number of different presentation styles have evolved to allow the authors to express their individuality.

The most common is to have nonindented paragraphs and ragged right margins. Other popular formats are to add indentations (and they, of course, vary from two characters up to ten), to indent the entire text, to have "inverse paragraphs" (that is, where the first line is flush left and the rest of the lines of a paragraph are indented, traditionally used for expository lists) and to have both left and right margins aligned.

The last, left- and right-justified text, can only be accomplished through the use of intermediate programs. This is intriguing because these authors are willing to place an artificial barrier between themselves and the medium in which they are writing, in the interest of a unique presentation style. It is akin to writing a letter to someone in pencil and then overwriting each character in ink.

Another common presentation style, due to the high rate of quoting present, is exemplified by:

Message from Person B:

```
> Person A writes:
> So I told my manager that their expectations were artificially high

Really?  You actually had the courage to tell him that?

>               and that if they really want to have the project
> complete on time that they should stop giving me new people to break in

*snicker*

> and just let me GET ON WITH THE JOB!

Right on!
```

What's interesting about this is that Person B has decomposed the original message into "conceptual units" and commented on them individually. Here's a further example:

Message from Person C:

```
> Person A writes:
> So I told my manager that their expectations were artificially high

I've found it common to have managers that don't
understand the reality of us folk on the front lines.

Good stuff. C.
```

Notice that the original meaning has been lost. In fact, readers who haven't seen the original might easily misconstrue the quote to be a general criticism of management by A, when it was not meant to be at all.

This is, paradoxically, due to the lack of a proper context for the quote. It seems to be a general problem with the sequential soliloquy dialogues of computer conferencing systems – authors are expected to minimize the quoting of others (to avoid "information overload") but at the same time must ensure that they don't quote others out of context.

Writing Styles

Along with presentation styles, and methods of quoting, different authors are finding that specific recognizable styles are also aids towards personalizing their communications.

A number of examples exist, from the lack of capitalization of 'i' when used as a pronoun to the complete lack of capitalization of names, to the use of ellipses to end sentences.

There are many interesting examples of these, one of which exhibits a number of these styles:

Message from Person X:

```
Nice idea, but it should be more than just a *mail* transport
system -- it should include other forms of (only electronic?)
communications as well.

Provide one [powerful, consistent] interface to the world, and
it will be SIMPLE.  AND that means it'll be useful.

That's how i'd do it, at least.
```

There are a number of interesting occurrences here, including the use of parenthetical remarks to suggest alternative interpretations of phrases, and the very unusual (in English prose) use of square brackets ("..one [powerful, consistent] interface..") to delimit further meaning to the phrase.

Also notice that other rules of English prose are ignored with regularity, such as beginning a sentence with a conjunctive ("AND that means...") or, as already noted, not capitalizing proper names.

It is this deliberate alteration of the language normally used for communication that is the tie-in with the personalization of the medium.

Signatures

Perhaps one of the most interesting areas of personalization of communication is the message closings, the individual signatures. Not surprisingly, it's common to see messages where the closing section is actually considerably *longer* than the body.

In this inherently impersonal medium, the signature is the one place, more than any other, where authors freely exhibit their individualism.

Electronic signatures may be broken into the following sections: closing salutations, the "signature" name, and disclaimers.

Closing salutations in more traditional mail are typically "Sincerely," or "Affectionately yours," etc. In electronic communications, by contrast, closing salutations are much more varied:

```
Take care, all.

May the light of love,
fill your life

From the Crow's Nest,

Share and enjoy,

cheers!
```

Note that some are indicative of the author personally caring about the unknown reader (presumably with the assumption that if the author exhibits concern about the reader, then the reader will, in return, care about the author), another is a "generic" salutation (with overtones of a particular lifestyle, however, e.g. the social drinking of alcohol) and the next is a self-label based on their place of employment (identifying with a group).

It's also interesting to note that certain conferences tend to have groups of mutually supportive members. The examples above are all from such a tight knit group.

If we examine a group with a more technical orientation, therefore, the closing salutations are, as expected, more technically oriented:

```
From the tty of,                      Guru-in-Waiting,
Thanks in Advance,                    In Real Life,
Any Ideas?
```

These are requests for information and less personal altogether. There is still the tendency to personalization, though, but it is much less apparent than in the more social groups.

Interestingly, technical groups have a fair number of unsigned articles, where there is a message body only. This almost never occurs in the more social groups.

Lacking the flair and individuality of handwriting, the closing name tends to be "permuted" to personalize them instead:

```
_J                                    -- John Doe
-- jd --                              John "Killer" Doe
John "I don't use it" Doe
```

As a lot of messages originate while the author is at work, disclaimers are also common as postscripts:

```
"Disclaimer: The above ideas are mine--I don't yet know who agrees with me."
"(The opinions above are my own, colored by my experiences, education and
experimentation, and should not be confused with anyone else, unless they
wish to share them, and in so, enrich us both)"
```

Notice that even in a standard section like a disclaimer, there is a large degree of personalization, to the point that the original intent of the disclaimer (to ensure that readers don't misconstrue the message as representative of the organization the author is a member of) has been lost entirely.

(I expect to have people contact me saying "That's *my* signature!" or something equivalent. This occurrence will show the degree to which the personalization of the medium has succeeded – there are thousands of people who send electronic messages every day, and yet we still recognize our own prose!)

Using Fictitious Names

I will only touch on this topic since it has been covered in detail elsewhere, but it's interesting to note that there is a fair amount of self-enforced anonymity on conferencing systems – people will use names like "pooh" or "phoenix" (often to avoid name recognition when met in person, but that's another topic entirely). In more socially-oriented discussion forums, there is more likelihood that someone will be "masquerading" as another, perhaps fictional person.

Also common is for people to "represent" fictitious organizations on the system, occasionally so as not to discredit where they work. Examples are a person from NASA having "The Home for Retired Hackers" as their organization, or someone from Sun Microsystems having their organization listed as "Fictional Reality, Ltd."

Hostility

A number of interesting articles have been written on the high level of emotion on conferencing and electronic communications systems, but it's worth another look from the perspective of personalizing an impersonal medium.

A typical electronic message is considerably more flamboyant and "charged with emotionalism" than the equivalent message in a more traditional medium (e.g. in person). The main reason for this is the desire to personalize the medium. Authors of messages are often judged purely on the content of the message rather than on the numerous other possible information cues, so the message has to be significant.

Consider a typical sequence of electronic mail messages (we're joining the conversation in mid-stream. Ignore the actual details of what is being discussed and read the tone and extreme emotion of the messages):

Message From Person 1

```
Subject: Re: termdb and so on...
>-- PARICULARLY when Company X then doesn't include the sources to the
>termdb descriptions...
Give me a break...What the hell more do you want?
...
Real difficult.  Termdb just beats the pants off the old system;
the sooner it disappears the better.
```

Notice the occurrences of inflammatory phrasing when a less dramatic tone would have sufficed. Particularly notice the overt hostility of the phrase "What the hell more do you want?" The number of spelling/grammatical mistakes is also surprisingly high – including the misspelling of *particularly*. Finally, notice the number of occurrences of colloquialisms, including "step forward," "giving a break," "beats the pants off," and so on.

Reply from Person 2:

```
>Give me a break...What the hell more do you want?
"what the hell more do you want?" Sounds like a nasty attitude
<person 1>...So what's your problem <person 1>?  Why are you jumping
down the throat of some frustrated user?  This is not a good sign of
your understanding of the Customers' needs.  You do understand that
(no customers = no jobs) don't you?  You know, we really can walk across
the street now, and we just may if attitudes like yours don't improve real quick.
```

Again, notice the hostility, and especially the aggressive physical threat against the previous author "...we really can walk across the street now, and we just may..."

Compare the last to another person's response to the same original message:

Reply from person 3:

```
      > Give me a break...What the hell more do you want?
      ...
> Real difficult.  Termdb just beats the pants off the old system;
> the sooner it disappears the better.
FLAME ON†:
```

[†] Flames are particularly hostile remarks. See the section entitled 'Flaming' for a further discussion of this phenomenon.

```
Unfortunately, not all of us happen to have SVR3, nor do we have
dbcmp(1) or anything similar.  But that's not my biggest beef...

...I do *not* like having to clean up after it throws up on my
filesystem, and I definitly do not consider that a "huge step
forward in design".

Flame off.

By the way, if anyone can send me an untic program, I would be
much obliged...
```

This time notice the fascinating transition from overt hostility to a request for helpful information (“By the way, ...”). It's almost as if the phrases “Flame On” and “Flame Off” completely release the author from having to be civil, since the reader “understands” that the section is an aberration.

Finally, we'll end this listing of messages with another from the author of the original:

A reply from Person 1:

```
>"what the hell more do you want?" Sounds like a nasty attitude <person 1>

I apologise for the snipey remarks.

>So what's your problem <person 1>?  Why are you jumping down
>the throat of some frustrated user?

Because the frustrated user was ranting and raving.  If I flame
about you, you have every right not to be civil to me.

>This is not a good sign of your understanding of the Customers' needs.

I understood exactly what the needs were.  I just didn't like
how they were conveyed, and the misinformation along with it.
The user gets to yell and scream, but I don't?  Feh.
If you talk reasonable, so will I.
```

Based on the last message, we could argue that to some extent the conferencing system is a self-moderated group, with people being publicly embarrassed by others and then apologizing to the entire group, but I don't think that this is the case at all. A close reading of the last message seems rather to indicate that the author is saying “I'll pretend to be sorry, but I'll phrase it in such a way as to vindicate myself and shift blame to the original author.” Consider the meaning of the very last sentence relative to the rest of the message... “If you talk reasonable, so will I.”

This rather long example is a particularly interesting one, as it not only demonstrates a number of the areas I've been discussing, including extensive quoting, adding verbal cues and so on, but also is an excellent sample of the flamboyant emotionalism of the medium.

Hecklers

While the previous problem seems widespread in computer-based communications, another, more glaring, example of this occurs occasionally due to the inability to suppress inflammatory interjections by hecklers. In an interpersonal situation it is easy to have someone forcibly removed if they get overly abusive, but in a distributed environment, there is no way other than peer pressure, which is oftentimes too difficult to coordinate (especially if the consensus is to ignore the offender).

Before we consider why this sort of behavior might tempt someone, let's see an example:

Message from <person X>

```
Subject: flames were called for
```

```
I have read a few notes on the boards or should I say flames of sorts
about my posting about <x> etc. For those of you who didn't read my last
note, the one that appears right before this one, then please do, and I
welcome any E-mail flames or non-flames you might have. I think in
reality its a subject that people are to afraid to talk about openly...
I posted my feelings about the subject can you?
```

Not only is this a very inflammatory message to include in an international conference, but it's also a fine example of the what causes this type of antisocial behavior. It's the same motivational factor that causes authors to personalize the medium, just exaggerated: the need to "fit in" and be accepted and appreciated by peers.

Specifically, on a system where one receives electronic mail from people one has never met, a simple measure of popularity is the amount of mail one receives and the number of times one is referred to in other messages. With hecklers, it seems that the context in which they are referred to is irrelevant.

To support this, consider the phrases "I welcome any E-mail flames or non-flames that you might have" and "I posted my feelings about the subject can you?" surrounding statements that deliberately provoke the reader (e.g. "I think that ... its [sic] a subject that people are to [sic] afraid to talk about...").

From this perspective it becomes obvious why heckling can be a successful strategy: to receive lots of electronic mail. This is why a number of conferencing systems are plagued with this type of antisocial behavior.

Flaming

Another area worthy of note is the concept of flaming. In the common vernacular it's used as a way of apologizing in advance for could be construed as overly hostile and abusive writing. The message presented previously, with the "Flame On/Flame Off" bracketing is quite typical, and is an attempt to add the ability to get angry without public embarrassment.

In normal life we all have moments of hostility, often towards others. A typical reaction is to go to a third party and complain (either an involved person (e.g. a boss) or an interested party (e.g. a spouse or friend)) or to confront the cause. If the original incident is somehow aired publicly, however, the injured party will feel that the response should be broadcast in a similar fashion. This is most noticeable in the mud-slinging of politicians during elections.

On the other hand, if the medium is a persistent one that others could possibly turn against the injured party, an attempt is made to somehow excuse the reply, to somehow let it be known that the following reaction is temporary and should not be construed as indicative of typical behavior of the author.

This is the role that the flaming appears to have taken. It is a method by which authors can write extremely hostile and inflammatory remarks, oftentimes littered with obscenities, without having their names "besmirched."

Positive Aspects

While these attempts to personalize the medium might seem to make it harder to read and understand the information being transmitted, there is an important benefit that hasn't been mentioned.

Electronic communications systems are the first form of communication where people are more akin to "expressers of ideas" rather than individuals with the idiosyncratic quirks we exhibit in person. That isn't to say that the medium is totally impersonal – we've already seen this isn't the case – but when one reads a message from another, the only information available is the message itself. There are no external cues to pick up on, such as age, race, sex, appearance, and such.

This has some significant ramifications in the treatment of the handicapped in our society. Currently, most handicapped people, either "visibly" handicapped or otherwise, are treated differently from those that don't exhibit any disabilities. Subsequently, when handicapped persons desire to communicate their ideas to the rest of a group, their ideas and thoughts are treated differently too (and too often discounted, as if a physical disability automatically means the person is mentally impaired as well).

On the computer-based communications systems, though, we've seen that all the common cues are simulated through various techniques. This directly translates to people being equal regardless of their physical or mental state until the message is read. The act of communication is completely on the message itself, and nothing else.

As a direct consequence of this, some members of conferencing systems have what would ordinarily be considered serious impairments yet they can participate without anyone else knowing they are handicapped. (This is not to say that all handicapped people wish they weren't, but certainly they desire to be treated as equals, as do all minorities.)

Finally

This is only a brief overview of the different ways by which people have begun to personalize this medium, and as the computer systems become more powerful (being able to transmit graphics, and font information, like *italicize* or **embolden**) we are sure to see yet more interesting and innovative ways to personalize electronic communications.

Note

The predominant source for the information presented in this article has been the Usenet, an international distributed conferencing system running on the UNIX® operating system, the conferencing system on the "Well" (The Whole Earth 'Lectronic Link) and private electronic mail.

Specific conferences that I'd like to acknowledge as being used for the examples are *net.singles*, a social group that discusses topics relevant to being single in our society, *net.unix*, a highly technical conference oriented towards questions and discussions about the UNIX operating system and related software, and *sexuality*, a forum discussing sexuality in our society on the Well.

The book *The Network Nation*, by Starr Roxanne Hiltz and Murray Turoff (Addison Wesley, 1978) explores a number of these topics in greater detail, and was helpful in confirming a number of observed behaviors and the probable motivations causing them.

Future Meetings

USENIX 1987 Summer Conference and Exhibition Phoenix

The USENIX 1987 Summer Conference and Exhibition will be held on June 8-12, 1987, at the Hyatt Regency Hotel in Phoenix, Arizona. There will be a conference, tutorials, and vendor exhibits.

USENIX 1988 Winter Conference and UniForum Dallas

The USENIX 1988 Winter Conference will be held on February 10-12, 1988, at the Registry Hotel in Dallas, Texas. It will be concurrent with UniForum 1988, which will also be in Dallas. The Conference will feature tutorials and technical sessions.

USENIX 1988 Summer Conference and Exhibition San Francisco

The USENIX 1988 Summer Conference and Exhibition will be held on June 21-24, 1988, at the Hilton Hotel in San Francisco, California. There will be a conference, tutorials, and vendor exhibits.

Long-term USENIX Conference Schedule

Summer '87	Hyatt Regency, Phoenix, AZ	Jun 8-12
Winter '88	Registry Hotel, Dallas, TX	Feb 10-12
Summer '88	Hilton Hotel, San Francisco, CA	Jun 21-24
Summer '89	Hyatt Regency, Baltimore, MD	Jun 13-16
Summer '90	Marriott Hotel, Anaheim, CA	Jun 11-15

The locations and dates for the 1989 and 1990 winter meetings have not yet been fixed.

Hindsight is 20/20

absolutely anonymous[†]

The sad plight of computer professionals rears its ugly head each time a new salary survey emerges. More and more nowadays we find that lawyers, doctors, and even accountants are heading up the salary scale. Computer people? "Well," many say, "My brother works at a bank. He makes pretty good money."

How did the world's most honored and technically challenging profession end up out of first place? We didn't use our heads in 1957; that's how. Let's do a comparison with the medical field.

The medical field deals with a rather complex machine, the human body. Doctors make life and death decisions. They administer drugs, perform surgery, diagnose diseases, and in general try to maintain the machine in good working order.

Oh, doctors have a few good perks: good salary, prestige, a place in the community. Doctors make **BIG MONEY**. They work hard, though, they tell us. They have to get up early in order to perform surgery (or to deliver babies!). They have to spend many years in school. They have to put up with a general public which is often abusive and unappreciative.

How different is our field? We deal with a complex machine. If we accidentally kill it, it's our job to fix it. If we can't fix it, we don't get paid! Doctors get paid no matter what. We don't administer drugs but we perform surgery, diagnose problems, and in general maintain machines in 100% working order; 99% is not enough. Have you ever heard a field engineer say, "George, I'm afraid we're going to have to amputate your floating point accelerator; it has cancer." Of course not. How about, "Harry, I'm afraid your payroll program has but six months to live. You better get its affairs in order."

Do we make **BIG MONEY**? I don't. I don't know many who do. Do we work hard? Of course we do. Do we get up early (or stay up late)? You bet. Years of school? Lots of computer jockeys with Ph.D.'s spent more than a decade in school. Put up with an abusive public? Ha!

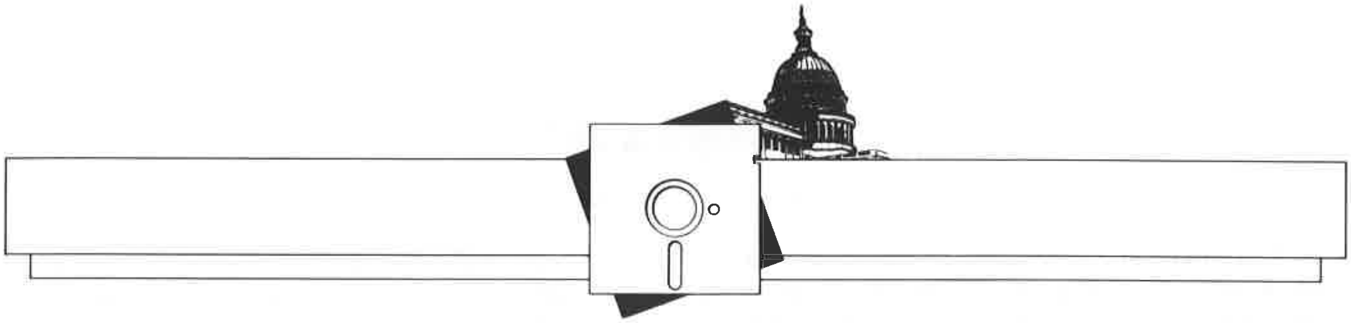
WHERE DID WE GO WRONG? I'm glad you asked that. Firstly, we did not point out how complex and extraordinary our machines are. You know, not just anyone can plug in a new Multibus disk controller. Chips? We should have guarded them like the King's Orb. We actually ENCOURAGED people to learn how to design, program, and repair our lovely machines. What a screw-up. We should have raised machines at least to the level of sanctity of the human body, maybe as high as the gods themselves.

Doctor schools have controlled admissions. There's never enough doctors. In a supply/demand economy, we flooded the world with supply. Dumb, dumb, DUMB. Did we license programmers? Oh no. Anyone can program; just read any LOGO book. Go to your local high school; are the kids practicing with new drugs (therapeutic drugs, you knew what I meant) or practicing performing surgery on their siblings? Of course not. They're too busy shooting aliens on their Apple IIe.

So, like it or not, we're doomed to be also-rans in the world of professionals. There's nothing we can do now short of hoping for a tremendous EMI pulse from some solar flare that will knock out every computer from here to the mountain in Boulder. We can't just shoot every BASIC or COBOL programmer on the earth. We've lost it.

Maybe we should try again in Gallium-Arsenide. Think anyone would believe that it's actually magic and requires an applied wizardry degree?

[†] The following anonymous piece of humor arrived in my e-mail. –PHS



PROGRAM

Washington 1987 USENIX Technical Conference

Omni Shoreham, Washington, D.C.

January 21-23, 1987

SPECIAL!

The Metropolitan Opry

(with Peter Langston)

will perform

at the Tuesday evening get-together

INTRODUCTION

USENIX, the technical and professional Association of UNIX users, is holding its Winter 1987 Technical Conference in Washington D.C. USENIX Conferences are dedicated to fostering the development and communication of research and technological information and ideas pertaining to UNIX and UNIX-related systems.

The Omni Shoreham has been selected as the Conference headquarters.

This booklet contains the following information:

- Information on the technical sessions and tutorials
- Hotel information – and how to make your reservation
- Registration information
- Airline information – and who to call for the best air fares

PROGRAM AT A GLANCE

(All events are being held at the Omni Shoreham)

TUESDAY, JANUARY 20, 1987

4:00 p.m. – 9:00 p.m.	**USENIX Registration Services Open**
7:30 p.m. – 9:30 p.m.	**USENIX Get-Together**

WEDNESDAY, JANUARY 21, 1987

7:30 a.m. – 7:00 p.m.	**USENIX Registration Services Open**
9:00 a.m. – 5:00 p.m.	**Technical Session** – What It Is To Be UNIX: A few simple notions and where they lead
9:00 a.m. – 5:00 p.m.	**Tutorials**

1 – UNIX System V Internals
2 – Software Development Using C and UNIX
3 – UNIX Networking
4 – Designing User Interfaces, Documentation and Presentation Graphics
5 – UNIX Performance Measurement/Analysis

THURSDAY, JANUARY 22, 1987

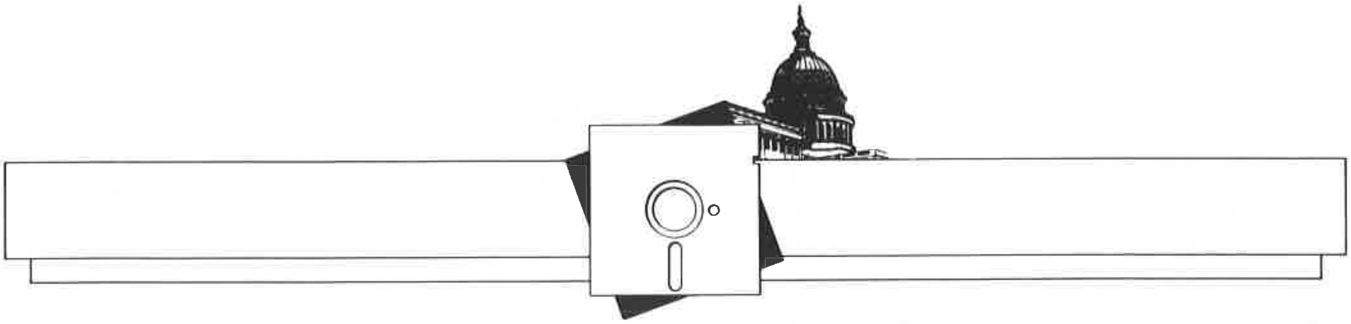
7:30 a.m. – 6:00 p.m.	**USENIX Registration Services Open**
8:30 a.m. – 5:30 p.m.	**Technical Session** – UNIX Performance
9:00 a.m. – 5:00 p.m.	**Tutorials**

6 – Introduction to 4.3BSD Internals
7 – Advanced UNIX Programming in C
8 – The Network File System
9 – Advanced UNIX System V Administration
10 – UNIX Device Driver Design (4.2BSD)

FRIDAY, JANUARY 23, 1987

7:30 a.m. – 9:30 a.m.	**USENIX Registration Services Open**
9:00 a.m. – 5:00 p.m.	**Technical Session** – UNIX-Based Data Management Systems
9:00 a.m. – 5:00 p.m.	**Tutorials**

11 – Advanced Topics on 4.3BSD Internals
12 – UNIX System V Remote File Sharing
13 – Managing a Local Area Network
14 – Windowing System Implementations for Berkeley UNIX
15 – Artificial Intelligence, Expert Systems and UNIX



ABOUT THE USENIX ASSOCIATION

The USENIX Association is a non-profit association of individuals and institutions interested in fostering innovation and sharing ideas, software, and experience where UNIX and UNIX-like systems and the C Programming Language are concerned. USENIX sponsors technical conferences and workshops and an annual vendor exhibition; publishes ;login: (a bimonthly newsletter); and serves as coordinator of a software exchange for appropriately licensed members. The individual and institutional members of USENIX are interested in problem solving with a practical bias, with research that works, and with timely responsiveness within a community made up of executives and managers, programmers, and academics.

CONFERENCE COMMITTEE

The organizing committee for the Washington D.C. Conference consists of the following people:

PROGRAM CHAIRS & COMMITEE MEMBERS

WHAT IT IS TO BE UNIX: A few simple notions and where they lead

Program Chairperson: David Tilbrook, *Quantime, Ltd.*

Program Assistant Chairperson: Deborah Scherrer, *mt Xinu, Inc.*

Program Committee: Neil Groundwater, *Sun Microsystems, Inc.*
Nigel Martin, *The Instruction Set*
Jim McKie, *Bell Communications Research*
Kirk McKusick, *University of California, Berkeley*
Norman Wilson, *AT&T Bell Laboratories*

UNIX PERFORMANCE

Program Chairperson: Herb Schwetman, *MCC*

Program Committee: Bob Brown, *NASA-RIACS*
John Chambers, *MCC*
John Quarterman, *Consultant*

UNIX-BASED DATA MANAGEMENT SYSTEMS

Program Chairperson: Paula Hawthorn, *Britton Lee, Inc.*

Program Committee: David DeWitt, *University of Wisconsin*
Judith Obarr, *Britton Lee, Inc.*
Lou Katz, *Metron Computerware, Ltd.*

TUTORIAL COORDINATOR

John L. Donnelly

USENIX MEETING PLANNER

Judith F. DesHarnais

CONFERENCE HOST

Center for Seismic Studies
Rick Adams, *Systems Analyst*

UNIFORUM TRADESHOW/CONFERENCE

Concurrent with the USENIX Technical Conference, /usr/group will be holding its UniForum Tradeshow/Conference at the Washington Convention Center. Continuous shuttle bus service will be provided between the Omni Shoreham, Washington Convention Center and Washington Hilton Hotel. UniForum attendees will be given a $25 discount when registering for the USENIX Technical Conference and USENIX attendees will be given a $25 discount when registering for UniForum's Three Day Conference Program.

HOTEL ACCOMMODATIONS

Special reduced room rates have been arranged for USENIX Conference attendees at the Omni Shoreham Hotel. The Shoreham is located on 11 acres in Rock Creek Park, in the heart of Washington D.C., just one block from Woodley Park Metro Station. A one night's deposit is required for each room reserved.

ROOM RATES	
SINGLE	DOUBLE
$70	$90

If a suite is desired, please make all arrangements directly with the hotel.

Please complete and return the hotel reservation form provided. If you do not have a hotel reservation form available, contact the hotel directly at Telephone # (202) 234-0700. BE SURE TO IDENTIFY YOURSELF AS A USENIX CONFERENCE ATTENDEE.

DISCOUNT AIRFARES

SIR TRAVEL, Inc., transportation coordinator for the USENIX Technical Conference, is pleased to announce outstanding savings on airfares to Washington, D.C.

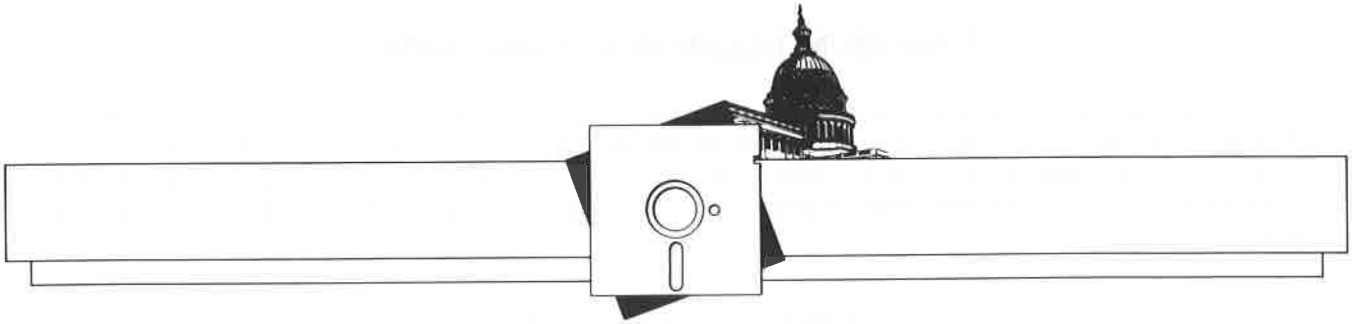
If you are planning to stay over after the conference and return on Sunday, you can save up to 75% off the regular coach fares (see USENIX Special Fare column below). Seats are limited, so call to make your reservations as soon as possible. If you cannot stay over a Saturday night, you can still save 40% or more off the regular coach fares (see USENIX Conference Fare below).

All fares are subject to change and are guaranteed at the time of ticketing. If lower fares become available, your ticket will be rewritten and you will be issued a refund.

DEPARTURE CITY	USENIX SPECIAL FARE	CONFERENCE FARE
ATLANTA	$158.00	$296.50
BOSTON	91.00	215.00
BUFFALO	116.00	116.00
CHICAGO	168.00	312.00
DALLAS	198.00	420.00
DENVER	238.00	306.00
DETROIT	98.00	198.00
LOS ANGELES	278.00	588.00
MINNEAPOLIS	188.00	348.00
NEW YORK	58.00	158.00
PORTLAND	278.00	563.00
SAN DIEGO	278.00	548.00
SAN FRANCISCO	278.00	548.00

Only a few cities have been listed. Outstanding values are available from ALL cities on most flights. For details and reservations call SIR TRAVEL, Inc. between 8:00 a.m. and 5:00 p.m. PST and ask for the USENIX Conference Desk.

TOLL FREE: (800) 231-1198
In California: (800) 231-4772



BIRDS OF A FEATHER SESSIONS (BOFS)

The USENIX Conference Office will schedule BOF requests in advance of the Conference so that the times and locations can be included on the BOF bulletin board in the conference registration area. On-site BOFS can still be scheduled and are encouraged. BOF sessions are available on Wednesday and Thursday evenings.

CONFERENCE PROCEEDINGS

Conference proceedings containing all papers from the technical sessions that were submitted prior to the meeting will be distributed at the conference during registration hours. One copy of the proceedings is included with each conference registration. Additional copies may be purchased at the conference registration desk or ordered after the conference from the USENIX Association office.

USENIX-GET-TOGETHER

Tuesday evening, January 20th, from 7:30 p.m. to 9:30 p.m. there will be a USENIX get-together for attendees to renew old acquaintances and to make new ones. Peter Langston and the Metropolitan Opry will perform. The exact room location will be posted in the conference registration area. A cash bar and light hors d'oeuvres will be available for your enjoyment.

TECHNICAL SESSIONS AND TUTORIALS

Technical Sessions

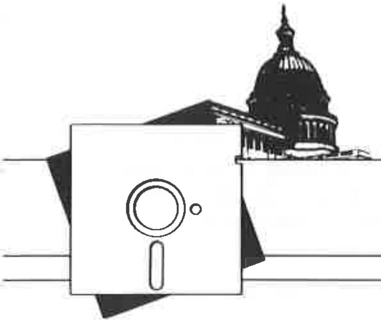
Emphasis will be placed on three topic areas in a workshop-oriented setting scheduled as follows:

Wednesday, January 21	**What It Is To Be UNIX:** *A few simple notions and where they lead*
Thursday, January 22	**UNIX Performance**
Friday, January 23	**UNIX-Based Data Management Systems**

Tutorial Program

The USENIX Association will once again offer its well-respected tutorial program. These tutorials focus on essential areas of UNIX technology, providing in-depth coverage of a number of topics. They are taught by leading experts, aimed at an audience of software professionals and technical managers, and should be immediately applicable to UNIX systems development and maintenance. This is your opportunity to learn from an expert at a reasonable cost and at a convenient time.

The tutorial program has experienced a constantly increasing demand for its offerings at recent USENIX Conferences. Many tutorials sell out before pre-registration closes. Attendance is limited, and pre-registration is strongly recommended. On-site registration will be allowed only if space permits. You must pick up your registration and tutorial hand-out materials at the Conference registration area before reporting to your tutorial session.



WEDNESDAY, JANUARY 21st

SCHEDULE FOR TECHNICAL SESSION AND TUTORIALS

TECHNICAL SESSION

WHAT IT IS TO BE UNIX: *A Few Simple Notions and Where They Lead*

On Wednesday, January 21, USENIX will feature seven invited talks by some of the best known and most loved experts in the UNIX field. The talks will examine and evaluate the key aspects of UNIX, its evolution, its past and present roles, its various communities, and its successes and failures in meeting these communities' needs and objectives.

The format of this session departs from the usual in that the speakers were all specially chosen, and their topics carefully selected and co-ordinated, to ensure a comprehensive, consistent and cohesive analysis of UNIX in retrospect.

The program for this session includes:

9:00 A.M.	**Welcome and Overview of Session** *David Tilbrook, Deborah Scherrer*
9:20 A.M.	**UNIX – The Lever** *John Mashey, MIPS Computer, Inc.*
10:30 A.M.	**UNIX – The Data Forms** *Eric Allman, Britton Lee, Inc.*
11:10 A.M.	**UNIX – The Language Forms** *Steve Johnson, The Dana Group*
11:50 A.M.	**UNIX and Networking – A Separate Peace** *John Mullen, Communication Machinery Corp.*
2:00 P.M.	**UNIX – The Social Disease** *Peter Collinson, University of Kent, Canterbury*
2:40 P.M.	**UNIX – Threat or Menace** *Dennis Ritchie, AT&T Bell Laboratories*
3:20 P.M.	**UNIX – The World View** *Mike O'Dell, Maxim Technologies*
4:30 P.M.	**Question-and-Answer Panel** *(Panel to include speakers and some members of the Program Committee)*

TUTORIALS

All tutorials are full day programs.

UNIX SYSTEM V INTERNALS

Instructor: Steve Buroff

AT&T Information Systems

This tutorial is a survey of the internal structure of AT&T's UNIX System V, and it is intended for people who maintain, modify or port UNIX systems. The tutorial will discuss traditional kernel concepts such as the file system, I/O subsystem, and process management, as well as new features in System V Release 3, such as demand paging, the file system switch, streams, remote file sharing and shared libraries. Attendees should have a good working knowledge of the UNIX system; basic kernel knowledge is recommended.

Steve Buroff is a Distinguished Member of the Technical Staff at AT&T Information Systems. He has worked on multi-processor development and on paging virtual memory implementations.

Important: *You must be licensed for UNIX System V source code to attend this tutorial. You must provide a corporate letter stating your AT&T source code license status and that you are covered by its non-disclosure provisions, OR indicate your USENIX Institutional Membership affiliation and sign the non-disclosure statement on the registration form.*

SOFTWARE DEVELOPMENT USING C AND UNIX

Instructor: Rob Kolstad

Convex Computer Corporation

The goal of this tutorial is to show a variety of UNIX uses so that attendees will see at least one example of most of the "good things". It is assumed that participants have used UNIX a little and have a clue about C programming. The lecture covers a large amount of material through slides and a lecture style that includes class interaction. The tutorial begins with three hours of discussion about C shell. Use of the C shell interactively and in scripts is included along with control structures, signals, variables, arguments, arithmetic, expressions, debugging, aliases, directories, initialization, history, and other material. The remaining four hours of the tutorial cover: awk, a string programming language; sed, the stream editor; make, a scheme for maintaining program modules; arguments and environments for C programs; the file system; regular expressions; C programming basics and lint; optimizing, debugging, and miscellaneous comments on UNIX and C. The tutorial covers the meat of the material listed above; occasional details unused in common practice are skipped. Large numbers of examples punctuate the slide presentation.

Rob Kolstad is a member of the USENIX Board of Directors and lectures frequently at USENIX conferences and elsewhere.

3

UNIX NETWORKING

Instructor: Martin Levy
AGS Computers, Inc.

This tutorial is directed at programmers who would like to understand the present day networking offerings available in the UNIX world. It will not be a full day of "how to write a networked program", but more of an understanding of the different networking standards and programming interfaces that you would encounter. The day will be spent understanding the current networking hardware standards and looking at how the IEEE 802 standards are being adopted by providers of UNIX hardware. The two areas that are of interest to the UNIX user, the programmer interface and user interaction with these networks will be covered. For the programmer, the Berkeley Socket and AT&T Streams models will be examined; for the user, the new network based file systems and added communication commands are reviewed. The tutorial will conclude with some programming examples that illustrate how powerful a network can be when applied to some traditional computing applications.

Martin Levy attended the University of Kent, Canterbury, where he was first exposed to UNIX. Since 1981 he has been a UNIX consultant working for AGS Computers in New Jersey. He has worked for the last 5 years within parts of the Bell System on UNIX and networking projects. His present work is related to Metropolitan Area Networks.

4

DESIGNING USER INTERFACES, DOCUMENTATION, AND PRESENTATION GRAPHICS

Instructor: Aaron Marcus
Aaron Marcus and Associates

Developers and users of UNIX-based interfaces, documentation, and presentation graphics need expertise in graphic design. Programmers, managers, technical editors, and human factors specialists in office automation, CAD/CAM, programming environments, printing and publishing, graphic arts, computer-aided instruction, and other applications usually do not have this expertise. This tutorial introduces the concepts, principles, methods, and examples of information-oriented graphic design as it applies to screen design, page layout, and slide design. From extensively illustrated lectures, including case studies in new typographic conventions for C and page layouts for UNIX documentation, participants will discover how to use typography, symbolism, color, spatial composition, animation, and sequencing in the design of icons and screens, user interface manuals, and documentation page layouts. They will also gain concrete knowledge on how to communicate more effectively through computer graphics.

Aaron Marcus is an internationally recognized authority on graphic design for computer graphics, especially chart, form, document, icon, and screen design. He and his staff of visible language programmers have designed and critiqued computer graphics presentations, interfaces, templates and documentation for several organizations. Mr. Marcus received a B.A. in Physics from Princeton University and B.F.A. and M.F.A. in Graphic Design from Yale University Art School.

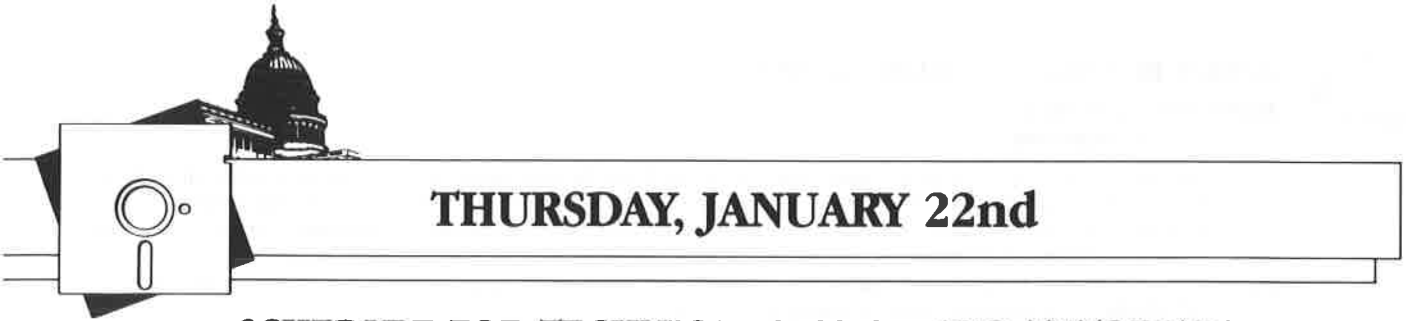
5

UNIX PERFORMANCE MEASUREMENT/ANALYSIS

Instructor: Alan F. Nugent
Consultant

The object of this seminar is to familiarize the attendee with tools, metrics, and techniques necessary to evaluate completely computer systems that run a version of the UNIX Operating System. The evaluation consists of anaylsis of the kernel, system services, compilers and libraries, and the general environment. The focus of the presentation will primarily be of benefit to anyone interested in a suite of tools that can be used to adequately analyze the system, whether for prospective purchase or for performance gathering and tuning during development. Some of the topics that will be discussed include: general terminology, "standard benchmarks", off-the-shelf tools, UNIX design philosophy and programming methodology, UNIX tools for performance enhancement, and the "performance perception". The attendee will also receive listings of a suite of UNIX programs, written in C and the shell that may be used to perform some of the data gathering described in the course.

Alan F. Nugent is the Vice President of Technology at Software Methods, Inc., a Massachusetts based consulting, engineering and training firm. He has been active in the UNIX and Artificial Intelligence communities for over 15 years. Prior to his current position, Mr. Nugent was with MASSCOMP, Hewlett Packard, and Binary Systems. He is also affiliated with the Institute for Advanced Professional Studies in Cambridge, MA.



THURSDAY, JANUARY 22nd

SCHEDULE FOR TECHNICAL SESSION AND TUTORIALS

TECHNICAL SESSION

UNIX PERFORMANCE

The UNIX Performance Technical Session presents thirteen papers. These papers cover a variety of topics, ranging from case studies involving networks and disk drives to methodologies for capacity planning. Performance issues of two UNIX utilities, *lex* and *news*, are studied in separate papers. Others topics such as parallel processing and job scheduling are also presented. A special highlight will be the keynote address, by Larry Perkins of Martin-Marietta Corp. who will present his perspective on UNIX performance and performance constrained systems. Attendees should find a useful blend of theory, methodologies and tools, as well as discussions of some actual performance problems and their resolutions. The format of the presentations will allow for questions from the audience.

Tentative Program

8:30 A.M. **Keynote Speaker**
Managing the Development of Performance-Constrained UNIX-Based Software on Microcomputers
Lawrence B. Perkins, Martin Marietta Corp.

9:00 to 10:30 A.M. **Session 1**
Experimental Sensitivity Analysis of Performance in a UNIX System
Lindsey E. Stephens and Lawrence W. Dowdy, Vanderbilt University

An Experimental Assessment of Resource Queue Lengths as Load Indices
Songnian Zhou, University of California at Berkeley

A Parallel Programming Process Model
Bob Beck and Dave Olien, Sequent Computer Systems

11:00 to 12:30 P.M. **Session 2**
A Prototype Capacity Planning and Configuration Modeling Tool for UNIX Systems
G. Ramamurthy, Y. T. Wang, Hank Nichols, and Mike Andrews, AT&T Bell Labs

A Knowledge-based System for Performance Tuning of the UNIX Operating System
Behrokh Samadi, AT&T Bell Labs

Software Performance Analysis Using Call Graphs and Workstation Graphics
David B. Leblang, Apollo Computer, Inc.

2:00 to 3:30 P.M. **Session 3**
ILMON: A UNIX Network Monitoring Facility
Lewis Burnett and Michael K. Molloy, The University of Texas at Austin

Virtual Disks: A New Approach to Disk Configuration
Thomas Van Baak, Pyramid Technology Corp.

Disk Response Time Measurements
Thomas D. Johnson, Jonathan M. Smith, and Eric S. Wilson, Bell Communications Research

4:00 to 5:30 P.M. **Session 4**
Tuning UNIX lex or It's NOT True What They Say About lex
Van Jacobson, Lawrence Berkeley Laboratory

Methodology and Results of Performance Measurements for a New UNIX Scheduler
Jeffrey H. Straathof, Ashok K. Thareja, and Ashok Agrawala, Univesity of Maryland

News Need Not Be Slow
Geoff Collyer and Henry Spencer, University of Toronto

TUTORIALS

All tutorials are full day programs.

6

INTRODUCTION TO 4.3BSD INTERNALS

Instructor: Dr. Thomas W. Doeppner, Jr.
Brown University

This tutorial is an introduction to 4.3BSD internals. It is geared to the programmer with a good knowledge of UNIX programming in C, but with little or no experience with UNIX internals. The course will cover process management, high-level I/O (including the file system), low-level I/O (i.e. device drivers), virtual memory, interprocess communication and networking. After taking the tutorial, the individual will have a basic knowledge of the structure of 4.3BSD and should be able to make his or her way through kernel code.

Thomas W. Doeppner Jr. received his Ph.D. in Computer Science from Princeton University in 1977 and has been on the faculty at Brown University since 1976. He has lectured extensively on UNIX internals, over the past three years for the Institute for Advanced Professional Studies.

Important: *You must be licensed for 4.2/3BSD source code (along with an appropriate UNIX source code license) in order to attend this tutorial. You must provide a corporate letter stating your AT&T source code license status and that you are covered by its non-disclosure provisions, OR indicate your USENIX Institutional Membership affiliation and sign the non-disclosure statement on the registration form.*

7

ADVANCED UNIX PROGRAMMING IN C

Instructor: Carol Meier
Consultant

This is the material every serious C programmer should know. We'll start by exploring proper C program structure in multiple files, variable scope and lifetimes, parameter passing and data abstraction. Then we'll find out what the cc command really does. The bulk of the course will be spent untangling advanced data structures (arrays of pointers to structures, pointers to functions, trees, ...), parsing command line arguments and the environment, mastering enumerations, bit fields, unions, variant structures and typedefs, understanding preprocessor macros with arguments and conditional compilation. Finally we will explain the UNIX system call interface with examples. Assumes knowledge of C basics.

After receiving her B.S. and M.S. degrees in Computer Science from the University of Pittsburgh, Carol Meier worked for Bell Laboratories as an applications programmer. Since 1983 she has worked as an independent consultant specializing in UNIX and C training and software development. She has presented dozens of professional technical seminars throughout the United States and Canada. She developed and currently teaches hands-on UNIX & C courses at the University of Colorado.

8

THE NETWORK FILE SYSTEM

Instructor: Mark Stein
Sun Microsystems, Inc.

The Network File System (NFS) is a distributed file sharing service, designed for use in heterogeneous computer networks, which allows a client user to access files transparently across machine boundaries without regard to machine type or operating system used. Remote Procedure Call (RPC) and External Data Representation (XDR) are support protocols used by NFS and are available for use by other network services. All NFS protocol specifications are in the public domain. This tutorial is aimed at software professionals who would like to learn more about the technical details of NFS and related areas (RPC, XDR, and mount protocols, Yellow Pages data lookup service, locking service, remote execution service, transport and user interfaces, auxiliary services, and NFS administration). It will cover architectural, protocol, and some implementation details of the various NFS components. In addition, we'll look at NFS' future directions.

Mark Stein is a Member of the Technical Staff in the Network Services Consulting group at Sun Microsystems. He is in touch with all aspects of NFS in the course of his work with the NFS vendor community, including conducting workshops and doing technical consulting. Mark has taught tutorials at three previous USENIX conferences.

9

ADVANCED UNIX SYSTEM V ADMINISTRATION

Instructors: Rebecca Thomas, *UNIX/WORLD*
Rik Farrow, *Consultant*

This one-day tutorial will cover some advanced topics appropriate for administering a System V UNIX System. The material is targeted to administrators, not systems programmers. Participants are expected to be practicing system administrators or have comparable knowledge. The ability to read Bourne shell and C programs would be necessary to follow the discussions. Advanced file system topics will be discussed including partitions, file system structures, and using the "fsck" and "fsdb" utilities to repair or rebuild damaged file systems. UNIX security issues are addressed in depth with emphasis on making your system more secure against unauthorized access. Approaches to optimize system performance by tuning your system using the tools provided with your UNIX system will be discussed. And we'll talk about two major system problem areas--errant processes and kernel error messages. Troubleshooting the UUCP system, with emphasis on interpreting debugging messages, status files, and error messages will also be covered.

Rebecca Thomas is technical editor of UNIX/WORLD magazine and author of two guide books on UNIX, *A User Guide to the Unix System* and *Advanced Programmer's Guide to Unix System V*. Rik Farrow is a UNIX Systems consultant and author. He has written UNIX installation manuals for several different computers, and numerous magazines articles. Rebecca Thomas and Rik Farrow are coauthoring a book on UNIX system administration for Prentice-Hall. They also present in-house tutorials on system administration topics.

10

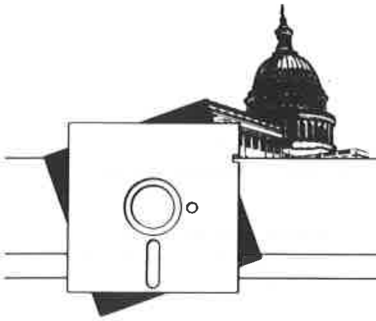
UNIX DEVICE DRIVER DESIGN (4.2BSD)

Instructor: Daniel Klein
Software Engineering Institute

This course is designed for people who wish to become familiar with the fundamentals of designing UNIX device drivers. A knowledge of the major structures and internals of 4.2BSD UNIX is a desirable prerequisite for this tutorial, although a specific knowledge of the finer details is not required. This tutorial will cover the major aspects of driver design, implementation, and device integration. Both DMA and programmed I/O device drivers will be covered, as well as block and character (buffered and unbuffered) interfaces. We will outline the design and implementation of structured I/O devices (i.e. disk drives), and semi-structured devices (i.e. tape drives and serial communications links). This course will also discuss all aspects of adding a new device to the kernel (i.e. autoconfiguration, special files, device tables, and debugging). The intended audience for this course is systems programmers who will be actively engaged in the maintenance or design and implementation of UNIX device drivers. Although this course will be geared towards 4.2BSD, a comparison between the Berkeley and Bell Labs approaches will be offered. Users of System III or System V will therefore find this course to be informative.

Dan Klein has been a teacher for the Institute for Advanced Professional Studies in Cambridge, MA, served as an independent consultant and has developed an interactive computer based training generator. He is presently employed full time at the Software Engineering Institute in Pittsburgh.

***Important:** You must be licensed for 4.2/3BSD source code (along with an appropriate UNIX source code license) in order to attend this tutorial. You must provide a corporate letter stating your AT&T source code license status and that you are covered by its non-disclosure provisions, OR indicate your USENIX Institutional Membership affiliation and sign the non-disclosure statement on the registration form.*



FRIDAY, JANUARY 23rd

SCHEDULE FOR TECHNICAL SESSION AND TUTORIALS

TECHNICAL SESSION

UNIX-BASED DATA MANAGEMENT SYSTEMS

On January 23, USENIX will explore the state of the art of UNIX-based data management systems.

Preliminary Agenda

9:00 A.M. **Introduction**
Paula Hawthorn, Britton Lee

9:10 A.M. **Keynote**
Database Management Systems: Past, Present and Future
Philip Bernstein, Wang Institute of Graduate Studies
Dr. Bernstein is a professor of information technology at the Wang Institute. He is the author of numerous papers on the theory, design and implementation of database systems, and is a co-author of the book "Concurrency Control and Recovery in Database Systems". He was formerly vice-president of software at Sequoia Systems, and a professor at Harvard University.

9:45 A.M. **Break**

10:15 A.M. **Distributed Database Systems: Why Distributed File Systems Are Not Enough**
Robert McCord, Relational Technology, Inc.
Dr. McCord is a manager of product marketing for RTI. He was a primary architect of distributed INGRES (INGRES*). He formerly has held positions at Tolerant Transactions and Synapse.

10:45 A.M. **Database Machines: Why Fast File Systems Are Not Enough**
Robert Taylor, Britton Lee, Inc.
Dr. Taylor is vice president of marketing and engineering at Britton Lee. He was formerly at IBM Research, and was a professor at the University of Massachusetts.

11:15 A.M. **Round-Table Discussion of Issues Raised in Morning Talks**
Paula Hawthorn, Chair; Philip Bernstein, Rob McCord, Robert Taylor, Participants

12:00 P.M. **Lunch**

1:00 P.M. **Data Management: A Full-Text Information Retrieval Perspective**
Ken Leefe, Fulcrum Technologies

1:45 P.M. **UNIX in Health Care: Medical Laboratories – A Case Study**
Sheldon Hamburger, Management Systems Engineering, Inc.

2:30 P.M. **Break**

3:00 P.M. **Budget Database System: A Project Ranking Tool**
Patricia Ton, IIT Research Institute

3:45 P.M. **Real World UNIX DBMS Applications: Experiences and Observations**
Steve Tolchin and Eric Bergan, Johns Hopkins Hospital

4:30 P.M. **Round-Table Discussion of Issues Raised in Afternoon Talks**
Participants: Sheldon Hamburger, Patricia Ton, Steve Tolchin and Eric Bergan

TUTORIALS

All tutorials are full day programs.

ADVANCED TOPICS ON 4.3BSD INTERNALS

Instructors: Mike Karels and Marshall Kirk McKusick
University of California, Berkeley

This tutorial, a repeat of the tutorial presented at the Summer 1986 USENIX Technical Conference in Atlanta, is directed at systems programmers who have taken a course on 4.2BSD internals or who have had at least a year of experience working on the 4.2BSD kernel. The tutorial will cover the performance work done for 4.3BSD and will also discuss recent and planned changes to the kernel interfaces and facilities. The intent of the tutorial is to present a wide variety of material at a descriptive level. Presentations will emphasize code organization, data structures, and algorithms.

Mike Karels received his B.S. in Microbiology at the University of Notre Dame. While a graduate student at the University of California, he was the major contributor to the 2.9BSD release of the Berkeley Software Distribution for PDP-11s. He currently is the Principal Programmer at the Berkeley Computer Systems Research Group, continuing the development of future versions of Berkeley UNIX. Kirk McKusick received his undergraduate degree in Electrical Engineering from Cornell University. His graduate work was done at the University of California, where he received Masters Degrees in Computer Science and Business Administration, and a Ph.D. in the area of programming languages. While at Berkeley he implemented the 4.2BSD fast file system and was involved in implementing the Berkeley Pascal system. He currently is the Research Computer Scientist at the Berkeley Computer Systems Research Group, continuing the development of future versions of Berkeley UNIX.

Important: *You must be licensed for 4.2/3BSD source code (along with an appropriate UNIX source code license) in order to attend this tutorial. You must provide a corporate letter stating your AT&T source code license status and that you are covered by its non-disclosure provisions, OR indicate your USENIX Institutional Membership affiliation and sign the non-disclosure statement on the registration form.*

12

UNIX SYSTEM V REMOTE FILE SHARING (RFS)

Instructors: Mike Padovano and Kang Yueh
AT&T Information Systems

Remote File Sharing (RFS) is one of the networking based features offered in AT&T UNIX System V Release 3.0 (SVR3). RFS adds a new dimension to the user computing environment by providing transparent access to remote files. RFS allows access of all UNIX system file types, including regular files, directories, special devices and named pipes, in addition to allowing file and record locking on remote files. This tutorial will cover the kernel architecture which supports the transparent remote file access, the user level name server and administrative tools which simplify the sharing. It is aimed at software professionals who would like to learn about the technical details of RFS. Attendees should have a good working knowledge of the UNIX system.

Mike Padovano and Kang Yueh are Members of the Technical Staff at AT&T Information Systems. Mike Padovano has worked on the administrative interface of RFS. He received his M.S. degree in Computer Science from University of Waterloo in 1982. Kang Yueh has worked on the kernel architecture and communication part of RFS. He received his Ph.D. in Computer Science from University of Pennsylvania in 1978.

13

MANAGING A LOCAL AREA NETWORK

Instructors: Evi Nemeth and Bob Coggeshall
University of Colorado, Boulder

This tutorial is a summary of all the things we (and many others) have learned over the past few years in managing a growing local area network. It is intended for system administrators and others involved in planning, configuring, installing, and maintaining a new networked UNIX facility. The course emphasizes 4.2/4.3BSD Ethernet, yet includes issues that are global to all networks. It contains introductory information and is probably not appropriate for administrators of large or medium-sized existing networks.

Topics to be covered include:
- building the network
  - network overview (5%);
  - buying and installing network hardware (20%);
  - network software installation (20%);
  - experience with various vendor products -- discussion (5%);
- managing the network
  - management issues, control, source code, users, resources, accounting (15%);
  - tools to make these chores easier (10%);
  - debugging -- hardware and software (15%);
  - writing programs that use the network (10%);

Evi Nemeth is on the Computer Science faculty at the University of Colorado and has built the University's Engineering Research Computing Facility from a single VAX 11/780 to its present compliment of over 50 machines. Bob Coggeshall, together with an army of undergraduate students, handles the operation of this facility.

14

WINDOWING SYSTEM IMPLEMENTATIONS FOR BERKELEY UNIX

Instructor: David Rosenthal
Sun Microsystems, Inc.

This course covers window systems for Berkeley UNIX, examining a representative kernel-based system (SunView), and a representative server-based system (X version 10) in considerable detail. It discusses the techniques used to implement the systems, their effects on application structure and performance, techniques for writing programs that port between systems, the problems of porting these systems between CPUs and displays, and the problems of porting these systems to System V. The course will then review the reasons for, and effects of, the changes being introduced in X version 11. It will end by describing the work underway at Sun to develop a PostScriptU based window system.

David Rosenthal has been researching interactive graphics and user interfaces since 1968. He co-chaired the technical review of GKS, and was Associate Director of the Informatoin Technology Center at Carnegie-Mellon Univesity. He was one of the developers of ITC's Andrew portable window system.

15

ARTIFICIAL INTELLIGENCE, EXPERT SYSTEMS AND UNIX

Instructor: Jody Paul
Consultant

This tutorial provides an overview of Artificial Intelligence and expert systems, an introduction to AI fundamentals, and a survey of the tools used to implement such systems in the UNIX environment. The principles and techniques of knowledge representation, problem solving, and learning are examined and illustrated with examples from actual systems. The theory and practice of building knowledge-based "expert" systems and knowledge engineering are presented, accompanied by examples from practical experience and working systems. This tutorial is aimed at technical professionals, researchers, and their managers who require a comprehensive overview of the state of the art in artificial intelligence and expert systems.

Jody Paul is a consultant in knowledge engineering at The Rand Corporation. He received his M.S. in Computer Science from the University of California at Los Angeles and for the last five years has been involved in AI and expert system development efforts. He is one of the chief designers and implementors of SAL (System for Asbestos Litigation) and has participated in the development of other expert systems for legal applications. Mr. Paul has extensive teaching experience in AI, both for universities and industry. His expertise and interests include automated knowledge acquisition, expert system tools and computer models of legal reasoning.

CUTOFF DATES TO REMEMBER

PRE-REGISTRATION DEADLINE .... December 31, 1986
HOTEL REGISTRATION DEADLINE .... January 6, 1987
CANCELLATION DEADLINE .... January 13, 1987

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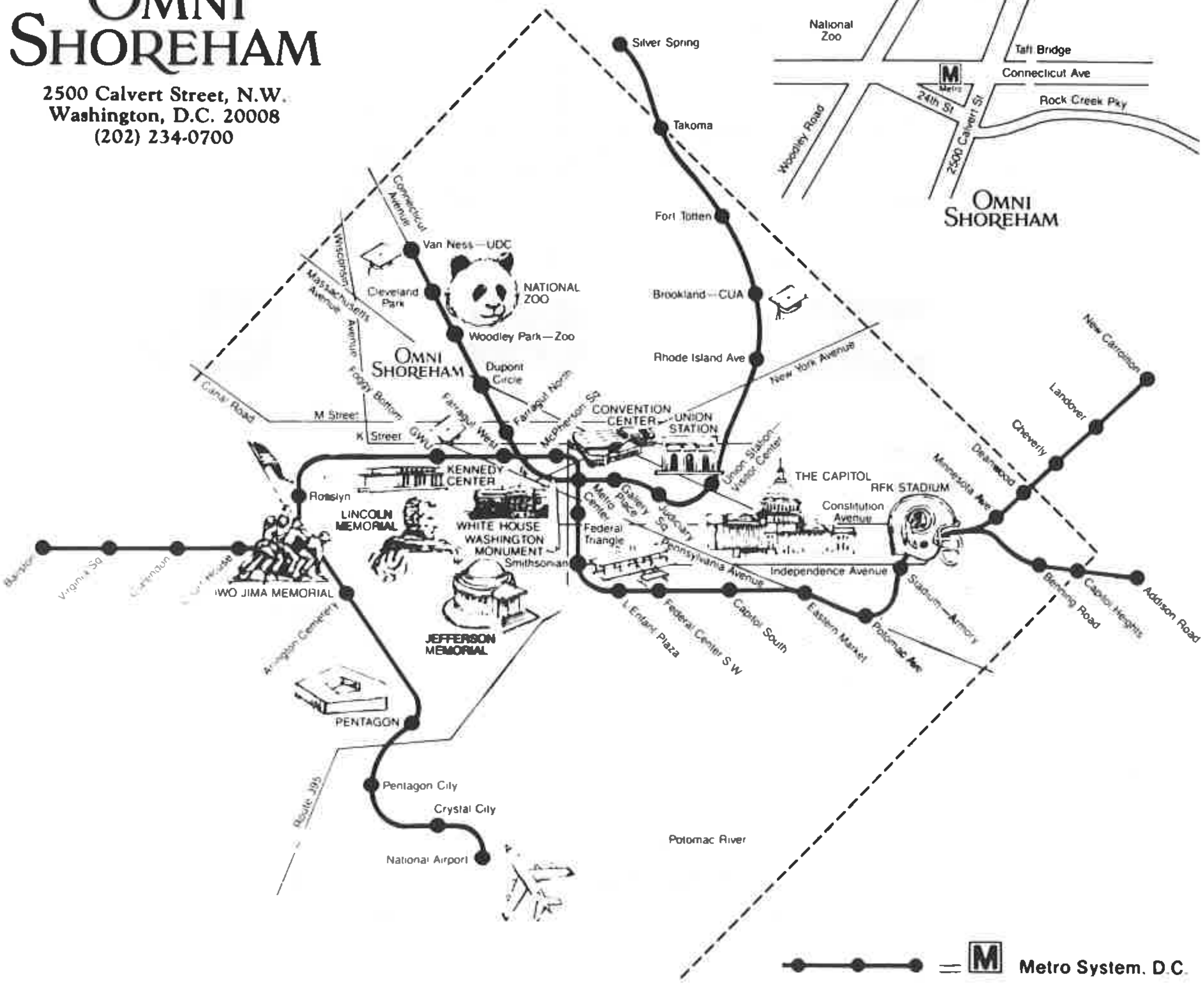
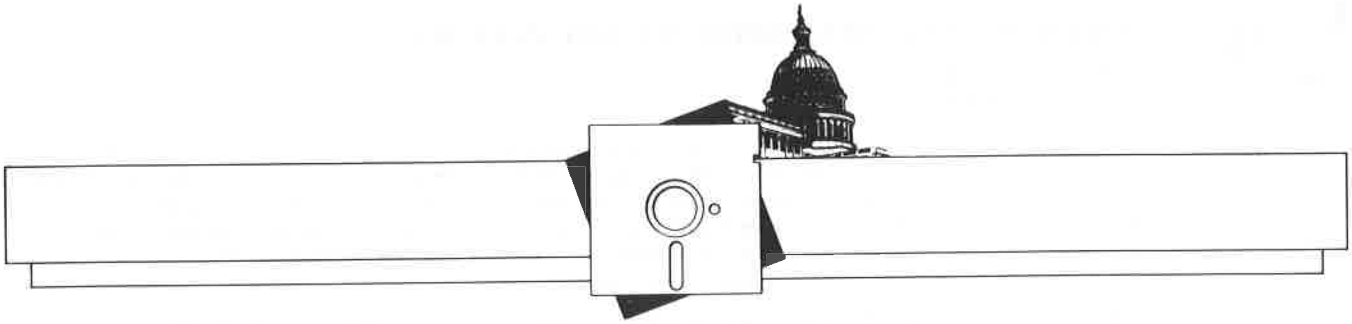
(202) 234-0700





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Two Tutorials with Technical Sessions
Three Tutorials with Technical Sessions

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Included in each of these registration categories is a copy of the Conference Proceedings.

Additionally, when you sign up for one or more tutorials you will receive the related hand-out materials, a USENIX binder, paper and pen.

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If you have registered for UniForum, see the UniForum Tradeshow/Conference section in this brochure.

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Non-members may designate $30.00 (full-time students $15.00) of your registration fee to pay for your 1987 Individual Membership in the USENIX Association. Just check the special box on the Conference registration form requesting membership.

REFUND CANCELLATION POLICY

If you must CANCEL, all refund requests must be in writing and postmarked no later than January 13, 1987. No cancellations can be taken over the telephone.

If you have registered but are unable to attend, you may call to substitute another person in your place.

For Additional Conference Information or Pre-Registration Materials Contact:

USENIX CONFERENCE OFFICE
P.O. Box 385, Sunset Beach, California 90742
Tel.: (213) 592-1381, (213) 592-3243

WeirdNIX

. . . or destructive QA of a standard

The IEEE P1003 committee is offering prizes for the the best new and technically legal interpretation of the POSIX^{tm} standard which nevertheless violates the intuitive intent of that standard.

The intent is to find how the standard might be misinterpreted in order to correct the errors that the misinterpretations demonstrate. Like destructive testing of hardware, we hope to stress the standard until it breaks and then fix what broke so that we can stress it further.

The criteria for judging the misinterpretations are:

It must be an interpretation of the P1003.1 POSIX Trial Use standard (as published by IEEE) which conforms completely to the standard. For the purposes of the contest, Appendices C.5, E.1 and J are included as part of the standard, but no other Appendices.

It must be represented as a detailed description in either pseudo-code and or text as how an implementation could behave so as to conform with the standard and still do "“the wrong thing.” Annotation as to why the interpretation is considered legal by the submitter will be of significant value in judging.

Interpretations must be of topics discussed in the standard. Areas that are not covered by the standard are not eligible. Interpretations which use some features of the standard and then take advantage of something upon which the standard is silent (and thus should not be) will be of significant value.

If there are similar entries, postmark dates will be used. If the entry is submitted electronically, the postmark date will be the time and date of mailing. In case of a tie, the entry with the earliest postmark will be used.

The winners will be judged by a subset of the IEEE P1003 working group, and the members of that group are not eligible for prizes. Members of the working group for the purposes of this contest are those individuals who attended either two or more of the most recent four working group meetings, or who attended in Palo Alto. The decision of the judges is final.

Prizes will be awarded to the "best" and "most demented" interpretations. "Best" is an interpretation that is legal and which is "likely," in that one could reasonably make the mistake and implement a system which did that. "Most demented" is a legal interpretation that would not actually be implemented because it violates common sense.

More than one first prize in each category may be awarded if, in the interpretation of the judges, the best submittals are of comparable quality and are distinct problems. Zero or more second prizes may also be awarded.

The first prize consists of:

- Hewlett-Packard has agreed to donate some HP 16C calculators.
- having your name in a place of honor in the acknowledgements section of the P1003.1 final use standard,
- a copy of the final use standard (with your name in it!)

Second prizes (if any) consist of:

- special mention in the acknowledgements section of the P1003.1 final use standard,
- a copy of the final use standard (with your name in it!)

The winners will be announced at USENIX/UniForum in January. Deadline for arrival of paper submissions is Friday, December 8th. Submissions arriving after that date will be considered only if they are in electronic form so they can be judged remotely. No submissions will be considered after January 1, 1986. Submissions should be sent either by mail (before December 8th) or by electronic mail to:

Donn Terry
co-Chair P1003.1
Hewlett-Packard Co.
3404 E. Harmony Road
Ft. Collins, CO 80525

hplabs!hpfcla!donn

The submitters of all interpretations that are considered for prizes (first postmark and legal) will be listed as contributors to the standard.

Submitting a proposal to the contest releases it to be used by IEEE both to improve the standard and to publish it as it sees fit.

. . . *continued*

A sample submission follows (with thanks to Hal Jespersen). The exact form is not critical, but this submission, were it eligible, would definitely get consideration for a prize. (In any case, it will be fixed!)

Problem:

getcwd() can legally return ".''

Explanation:

getcwd() returns a pointer to the pathname of the current working directory. The definition of pathname allows the dot directory as a valid pathname. Returning dot from *getcwd()* is an effective no-op, but legal.

Proposed Correction (optional):

Add the following as a second sentence in section 5.2.2.2: "The pathname that is pointed to is a full pathname, expressed relative to the root directory.''

– Donn Terry

☛ SALE! SALE!! SALE!!! ☚

Do you remember those 10th Anniversary T-shirts with the daemons and the pipes? Recall that volume of Proceedings from Salt Lake City that just cost too much?

Well Washington (yes, Washington) will be the place to satisfy your lusts.

USENIX, your user-friendly technical and professional association, is going to have a sale!

All T-shirts reduced to $5! No matter what size or color you want, we may have it. Whatever logo you want, we've got USENIX! And for only $5. Now you can stock up for the wet T-shirt contest in Phoenix, for those days on the golf course at Armonk or Sunnyvale!

And that's not all!

All proceedings (except those published in 1986) will be reduced in price! Not $20; not $17.50; not $12.50, but an UNBELIEVABLE $10 each for Salt Lake City, Dallas and Portland!

This sale will be for the three days of the Washington conference only! Yes, only in Washington will you be able to purchase T-shirts at the bargain price of $5 each and proceedings for only $10 each.

This is a once-in-a-lifetime chance to get a USENIX T-shirt for every day of the year! You may already have won!

SALE!!! SALE!! SALE!

Why Source Licenses?

Over the past month there have been several inquiries as to why a source license is necessary for the purchase of 4.3BSD manuals.

The inside of the cover of the 4.2BSD manuals explains this briefly:

> Printed by the USENIX Association as a service to the UNIX Community. This material is copyrighted by The Regents of the University of California and/or Bell Telephone Laboratories, and is reprinted by permission.

The USENIX Association began printing the 4.2BSD manuals in 1984 under contractual obligation to both the University of California and AT&T. There were printings of the 4.2BSD manuals in July 1984, December 1984, September 1985, and March 1986.

The 4.3BSD manuals have been printed by Howard Press for the USENIX Association with the permission of the Software Sales and Licensing division of AT&T and under a legal agreement with The Regents of the University of California. Under these agreements, USENIX must verify the current license status of prospective purchasers.

The 4.3BSD manuals are copyrighted and licensed material under the agreements with AT&T and UCB. The manuals can only be supplied by USENIX to holders of **both** an AT&T 32/V or System III or System V license **and** a University of California 4.2BSD or 4.3BSD license.

Whenever institutional or supporting members of USENIX order manuals, they attest that they do, indeed, hold the requisite licenses and they appoint the Association as their agent in reproducing manuals for them. The Association must verify that these licenses are held. "License verification" is one of the benefits of Institutional or Supporting membership.

As The Regents of the University of California are the owners of the copyright for the 4.x manuals, and as AT&T is the issuer of licenses, USENIX can only distribute the materials consonant with the restrictions imposed by these two organizations.

USENIX does not control the distribution policy, nor does the Computer Science Research Group, the technical group that created 4.xBSD. While it may be that times have changed and that there should not be such controls on manual distribution, such a decision is not within the legal power of USENIX, but solely within the power of the Regents of the University of California and AT&T.

– PHS

Ten Years Ago in ;login: (a.k.a. UNIX News)

from the November 1976 issue of **UNIX NEWS**

ADDITION TO THE DISTRIBUTION

Included in the distribution will be two new forms of *tp*. One is a rewrite of *tp* from assembler to C. It is believed by the author to be identical in function to standard *tp*. The second is an enhancement for magnetic tape called super-tp (*stp*). It allows updates to an *stp* magtape. The distribution referred to above will be written with *stp*. It may be read with standard *tp*, but any additions to the standard distribution on the same tape will be placed there by an update run of *stp* and will be readable only by *stp*. The documentation of *stp* on the distribution tape will be self explanatory (we hope).

from the December 1976 issue of **UNIX NEWS**

STP PROBLEMS

Word has drifted back to New York of troubles with *stp*. If you have had such, either put it to the hotline or, if you prefer talking to people, call Mel Ferentz at 212-977-5371.

A third item in this series will appear in the January/February issue of **;login:**, *as it appeared in the February 1977 issue of* **UNIX NEWS.**

– PHS

4.3BSD UNIX Manuals

The USENIX Association is sponsoring production of the 4.3BSD UNIX Manuals for its Institutional and Supporting members[†]. This article provides information on the contents, cost, and ordering of the manuals.

The 4.3BSD manual sets are significantly different from the 4.2BSD edition. Changes include many additional documents, better quality of reproductions, as well as a new and extensive index. All manuals are printed in a photo-reduced 6″×9″ format with individually colored and labeled plastic "GBC" bindings. All documents and manual pages have been freshly typeset and all manuals have "bleed tabs" and page headers and numbers to aid in the location of individual documents and manual sections.

A new Master Index has been created. It contains cross-references to all documents and manual pages contained within the other six volumes. The index was prepared with the aid of an "intelligent" automated indexing program from Thinking Machines Corp. (which also donated a great deal of machine time and programming assistance), along with considerable human intervention from Mark Seiden. Key words, phrases and concepts are referenced by abbreviated document name and page number.

Manual	Cost*
User's Manual Set (3 volumes)	$25.00/set
User's Reference Manual	
User's Supplementary Documents	
Master Index	
Programmer's Manual Set (3 volumes)	$25.00/set
Programmer's Reference Manual	
Programmer's Supplementary Documents, Volume 1	
Programmer's Supplementary Documents, Volume 2	
System Manager's Manual (1 volume)	$10.00

* Not including postage and handling or applicable taxes.

While two of the manual sets contain three separate volumes, you may only order complete sets.

The costs shown above do not include applicable taxes or handling and shipping from the publisher in New Jersey, which will depend on the quantity ordered and the distance shipped. Those charges will be billed by the publisher (Howard Press).

Manuals will be available as soon as printing is completed. To order, return a completed "4.3BSD Manual Reproduction Authorization and Order Form" to the USENIX office along with a check or purchase order for the cost of the manuals. You **must** be a USENIX Association Institutional or Supporting member. Checks and purchase orders should be made out to Howard Press. Orders will be forwarded to the publisher after license verification has been completed, and the manuals will be shipped to you directly from the publisher.

4.2BSD User's Manuals and System Manager's Manuals are sold out;

Only 4.2BSD Programmer's Manual Sets are still available.

[†] Tom Ferrin of the University of California at San Francisco, a former member of the Board of Directors of the USENIX Association, has overseen the production of the 4.2 and 4.3BSD manuals.

4.3BSD Manual Reproduction Authorization and Order Form

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Summary of Board of Directors' Meeting in Atlanta, June 9-10

Attendance

Present at the meeting were: Thomas E. Ferrin, Stephen C. Johnson, Lou Katz, Rob Kolstad, Lewis Law, Marshall Kirk McKusick, John S. Quarterman, Deborah K. Scherrer (Vice President, in chair), Michael D. Tilson, Waldo M. Wedel, David A. Yost – Board members and members-elect; Judy DesHarnais – Conference Coordinator; John L. Donnelly – Exhibit Manager; Peter H. Salus – Executive Director; Mike O'Dell – Atlanta program chair.

Conference, Tutorials, Exhibits

There was a good deal of discussion about the Atlanta conference. While satisfaction was expressed concerning the technical sessions and their organization and the tutorials, there was apprehension where the decreasing number of exhibitors was concerned. Donnelly was requested to communicate with potential exhibitors. It was suggested that USENIX needed a more professional route to publicity. Wedel was asked to seek a firm to set up a USENIX press kit for use at conferences.

Financial Report

The tax situation and the Internal Revenue Service audit were discussed at length. It was felt by the Board that to ensure to itself and the membership that the Association's accounting data and procedures were in order, an external independent audit should be commissioned. The Treasurer and the Executive Director were asked to arrange for such an audit.

;login:

The future of *;login:* was discussed. The fact that the trend toward a larger number of technical articles was to be continued led to a discussion of the need for a technical editor. Kolstad and Salus were empowered to write up a job description. Kolstad was asked to serve as technical editor until an appointment was made.

P1003

Quarterman reported on the IEEE P1003 committee. Making some of the material accessible to the USENIX membership led to the question of an article for *;login:* [such an article appeared in the September/October 1986 issue].

Long Range Planning

Katz reported on the discussions of the Long Range Planning Committee [see summary in the September/October issue of *;login:*].

4.3BSD Manuals

The development of the 4.3BSD manuals and their progress toward publication was discussed. Ferrin was authorized to proceed with the printing of 5,000 sets of manuals.

Washington Meeting

The Washington meeting was considered at some length. [The full program appears in this issue of *;login:*. The meeting chair is Rick Adams.]

Stargate

The Weinstein/Horton proposal was considered for three hours. The Board decided to continue investigation of the project and to discuss it again at their October meeting. Quarterman and Wedel were designated as liaison concerning this project.

– PHS

The 'Stargate' Project

Since 1984, the USENIX Association has been interested in extending accessibility of the networks through use of contemporary technology.

The principal suggestion concerning the future net was one emanating from Lauren Weinstein and Mark Horton, though other possibilities were submitted to the Board of Directors as a result of an RFP.

At the Atlanta meeting, Weinstein and Horton submitted a brief plan, and at the October meeting of the Board, a full business plan constructed by Wally Wedel was considered.

The latter clearly demonstrated that the plan as suggested by Weinstein and Horton was not financially feasible.

USENIX funding of this project will terminate in January, unless a viable proposal is presented at the January meeting of the USENIX Board of Directors.

– PHS

Atlanta Videotapes Available

As announced in the July/August *;login:*, the three presentations which opened the Atlanta USENIX Conference were videotaped. Orders for the tapes are now being accepted.

There are two tapes:

Tape one contains Jon Bentley's "Pictures of Programs," a talk on the merits and insights of graphic presentation of algorithmic problems, including the greedy travelling salesman and a wire-wrapping problem. In addition, this tape contains the Awards Ceremonies and Presentations.

Tape two contains two music presentations: Mike Hawley's "MIDI Music Software for UNIX" and Peter Langston's "(201) 644-2332 or Eedie and Eddie on the wire: An experiment in Music Generation."

Each tape is available in either VHS or Beta format. Inside the US and Canada, the tapes are $20 each, including postage and handling charges. Elsewhere in the world, the tapes are $30 each, including air mail charges.

Place orders directly with USENIX Association, including a check or money order in US dollars for the full amount due. Please remember to specify which tape(s) you want and which format you desire. Allow 4 to 6 weeks for delivery.

– PHS

Future Workshops

In 1984, 1985 and 1986, the USENIX Association sponsored Computer Graphics Workshops. The proceedings of two of these were subsequently published, the third is in the works.

However, it is clear that other workshops are possible and that there are topics other than computer graphics that are of interest.

The USENIX Association would be interested in receiving suggestions as to possible future workshops from possible organizers. The Association's Conference Office would make hotel and transportation arrangements and send out calls for papers, programs, and registration material. The Association Office would produce the proceedings.

If you are interested in organizing a workshop or want to suggest a topic, please let me know. I'll carry the ball from there.

–PHS
{ucbvax|decvax}!usenix!peter

Local User Groups

The USENIX Association will support local user groups in the following ways:

- Assisting the formation of a local user group by doing an initial mailing for the group. This mailing may consist of a list supplied by the group, or may be derived from the USENIX membership list for the geographical area involved. At least one member of the organizing group must be a current member of the USENIX Association. Membership in the group must be open to the public.
- Publishing information on local user groups in *;login:* giving the name, address, phone number, net address, time and location of meetings, etc. Announcements of special events are welcome; send them to the editor at the USENIX office.

Please contact the USENIX office if you need assistance in either of the above matters. Our current list of local groups follows.

In the **Atlanta** area there is a group for people with interest in UNIX or UNIX-like systems, which meets on the first Monday of each month in White Hall, Emory University.

Atlanta UNIX Users Group
P.O. Box 12241
Atlanta, GA 30355-2241

Marc Merlin	(404) 442-4772
Mark Landry	(404) 365-8108

In the **Boulder**, Colorado area a group meets about every two months at different sites for informal discussions.

Front Range Users Group
USENIX Association Exhibit Office
Oak Bay Building
4750 Table Mesa Drive
Boulder, CO 80303

John L. Donnelly (303) 499-2600
usenix!johnd

A UNIX users group has formed in the **Coral Springs**, Florida, area. For information, contact:

S. Shaw McQuinn (305) 344-8686
8557 W. Sample Road
Coral Springs, FL 33065

Dallas / Fort Worth UNIX User's Group
Seny Systems, Inc.
5327 N. Central, #320
Dallas, TX 75205

Jim Hummel (214) 522-2324

The **Los Angeles** UNIX Group (LAUG) meets on the third Thursday of each month in Redondo Beach, California. For additional information, please contact:

Drew Bullard (213) 535-1980
{ucbvax,ihnp4}!trwrb!bullard

Marc Ries (213) 535-1980
{decvax,sdcrdcf}!trwrb!ries

In **Minnesota** a group meets on the first Wednesday of each month. For information contact:

UNIX Users of Minnesota
Carolyn Downey (612) 934-1199

In the northern **New England** area is a group that meets monthly at different sites. Contact one of the following for information:

Emily Bryant (603) 646-2999
Kiewit Computation Center
Dartmouth College
Hanover, NH 03755

decvax!dartvax!emilyb

David Marston (603) 883-3556
Daniel Webster College
University Drive
Nashua, NH 03063

In the **New York City** area there is a non-profit organization for users and vendors of products and services for UNIX systems.

Unigroup of New York
G.P.O. Box 1931
New York, NY 10116

Ed Taylor (212) 513-7777
{attunix,philabs}!pencom!taylor

The **New Zealand** group provides an annual Workshop and Exhibition and a regular newsletter to its members.

New Zealand UNIX Systems User Group
P.O. Box 13056
University of Waikato
Hamilton, New Zealand

An informal group has started in the **St. Louis** area:

St. Louis UNIX Users Group
Plus Five Computer Services
765 Westwood, 10A
Clayton, MO 63105

Eric Kiebler	(314) 725-9492

ihnp4!plus5!sluug

In the **San Antonio** area the San Antonio UNIX Users (SATUU) meet twice each month with the second Wednesday being a dinner meeting and the third Wednesday being a "roving" meeting at a user site.

San Antonio UNIX Users
7950 Floyd Curl Dr. #102
San Antonio, TX 78229-3955

William T. Blessum, M.D.	(512) 692-0977

ihnp4!petro!bles!wtb

In the **Seattle** area there is a group with over 150 members, a monthly newsletter, and a software exchange system. Meetings are held monthly.

Bill Campbell	(206) 232-4164

Seattle UNIX Group Membership Information
6641 East Mercer Way
Mercer Island, WA 98040

uw-beaver!tikal!camco!bill

A UNIX/C language users group has been formed in **Tulsa**. For current information on meetings, etc. contact:

Pete Rourke
$USR
7340 East 25th Place
Tulsa, OK 74129

In the **Washington, D.C.,** area there is an umbrella organization called Capitol Shell. It consists of commercial, government, educational, and individual UNIX enthusiasts. For information and a newsletter write:

Capitol Shell
8375 Leesburg Pike, #277
Vienna, VA 22180

Rick Wilder	(203) 476-5261

seismo!cal-unix!capish

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uucp: {decvax,ucbvax}! ______________________________